

Autism CRC Research Update

Autumn 2017



Transforming the lives of people living with autism across the lifespan.

In this edition...

Improving **emergent**
literacy skills

Support for **rural and**
remote students

An emotion **recognition**
computer game

Australia's first **autism**
Hackathon

Autism CRC apps4autism Hackathon

Autism CRC has hosted Australia's first Hackathon designed to translate evidence-based research into real-life solutions specifically with and for the autistic community.

The three-day event saw teams of autistic adults, developers and designers, and service providers working together to develop technology solutions.

The apps4autism Hackathon brought together teams of people with diverse skills and strengths to translate five research projects into an app prototype.

The research projects targeted all age groups and included a program that supports adolescents to transition successfully into post-school life and an anxiety resource for adults.

"Autism CRC undertakes research that will provide practical and tangible benefits to the autism community across the lifespan," said Autism CRC CEO, Mr Andrew Davis.

“ *The Hackathon provided a unique opportunity to fast-track the process of translating our research into prototype apps for use by the community.* **”**

"This innovative event had autistic people at the centre of the process to ensure that the app developed was appropriate and beneficial for the autistic community."

"Across the three days, team members brought their individual perspectives,

strengths and thinking to the process. Ideas were challenged and enhanced, continually improving the end product."

The 'Relate' Team, translating research outcomes from Griffith University and led by Dr David Trembath, received the most votes to secure further investment to develop the app.

Relate is a collaboration space for parents, researchers, and education professionals who want to improve communication outcomes for minimally verbal children on the autism spectrum.

"The Hackathon was an outstanding event, unlike anything I have experienced in my research career, with the level of sharing, energy, and insight generated within and across teams truly inspiring and extremely productive," said Dr Trembath.

"My sense is that not only did the carefully orchestrated design process lead to excellent outcomes for the projects, but that it has also positively shaped the way all those involved will think about, and work with, one another in partnership moving forward."

Members of the Hackathon team who developed the original prototype are continuing to work together to refine and develop the Relate app.

Autism CRC would like to thank our partners for their generous support of the apps4autism Hackathon including, Salesforce, ANZ, The Still Dynamic, The Post Project, nVision Talent, Specialisterne Centre Australia and Bracket Labs.





From the CEO

Welcome to the Autumn 2017 edition of the Autism CRC Research Update

Mr Andrew Davis, Autism CRC CEO

As Australia's only national autism research centre, Autism CRC is uniquely positioned to deliver evidence-based outputs that will have a positive impact across Australia and internationally.

Four years into our eight-year program under the Federal Government's CRC Programme, we are already seeing real impact in classrooms, workplaces and the health and disability sectors.

Successful delivery of the CRC research program remains our major focus.

At the same time, having brought together the expertise, resources and energy of our national collaboration, we are also pursuing a key objective of our mission – to build a self-sustaining operation to the benefit of our community. Our collaborative agreements with the National Disability Insurance Agency and Aspect in its capacity as manager of the Positive Partnerships program are the first planks in these broader foundations.

Building on the results of our Research Priorities survey last year, Autism CRC has started to define the next phase of our research agenda. At our recent Participant Day, those Participants attending reflected on the achievements of the CRC to date and identified gaps in the evidence base for autism-related practice and policy – across the lifespan.

An extensive stakeholder engagement process is now underway to continue to define and refine this agenda. In the coming months, the CRC will be asking for input from its stakeholders to ensure that Autism CRC continues to invest in research that delivers tangible outputs that are of benefit to the autistic and broader autism communities.

Individuals on the spectrum, their parents and carers, and professionals working with individuals on the spectrum will be invited to contribute to this process and agree our research priorities over the next five years. This will see the start of a process by which our stakeholders will review and define our rolling research plan on at least an

annual basis. Details will be available on the Autism CRC website in the coming months.

We are looking forward to showcasing both the next phase of Autism CRC's research agenda and our current work at the 2017 Asia Pacific Autism Conference (APAC17) being held in Sydney from 7 to 9 September.

The theme of APAC17 is Growing with Autism. Hosted by Autism Spectrum Australia (Aspect), the conference aims to celebrate the strengths, interests and talents of people on the autism spectrum of all ages. APAC17 will see a range of CRC researchers presenting findings emerging from our research projects, along with participant case studies highlighting the impact that evidence-based product, practice and policy are having in our community.

We look forward to seeing you at APAC17.

The Autism CRC Awards for Achievement in Autism Spectrum Research recognise researchers who demonstrate a commitment to high quality research practices and outcomes that will truly benefit people on the spectrum.



Autism CRC Chair, Ms Judy Brewer, announced the winners of these awards at the Australasian Society for Autism Research (ASfAR) Conference in Perth.

Dr Josephine Barbaro from La Trobe University accepted the award for Best Translation of Autism Research. Julia Tang and Melissa Black from Curtin University accepted the award for Best Inclusive Research Practice.

Emotion Recognition Computer Game

A computer game has been developed to help young adults on the autism spectrum identify emotions in a fun and engaging way. Autism CRC researchers from Curtin University are now trialling the computer game analysing the EEG and eye tracking results of participants.

Two Autism CRC PhD Scholars from Curtin University, Julia Tang and Melissa Black, are working together to develop a novel social emotional skills program to help young adults on the autism spectrum improve their emotion recognition skills.

Julia has held focus groups, which included teenagers and young adults on the spectrum, to develop content and features for the computer game.

“It was critically important that young autistic adults provided input to the computer game to support optimum learning for autistic people. We also consulted broadly with allied health professionals including teachers, occupational therapists and psychologists who work with teenagers and young adults on the spectrum,” said Julia.

“*In developing the game, we worked with computer science professionals many of whom are on the spectrum.*”

“This input helped us develop the story, determine the learning goals and decide what feedback and rewards should be included in the game.”

The first phase of the project is almost complete with the computer game ready to be trialled by participants who will receive individualised biofeedback on their brain activity when recognising emotions in others.



“While computer games have been used to support emotion recognition for autistic individuals in the past, incorporating EEG and eye tracking software is quite novel,” said Melissa.

“We will be using EEG and eye tracking software to test whether the computer game is helping to improve emotion recognition skills and whether the new skills are able to be generalised in daily life.”

“By looking at the brain activity of autistic adults while playing the computer game, we can show adults how their brain is working to process emotions. This will allow us to demonstrate whether emotion recognition is improving at a neurological level.”

The researchers have incorporated scenarios into the game which may be particularly challenging for autistic individuals.

For example, demystifying some of the social cues in the workplace by recognising emotions in colleagues will be of great benefit to those on the spectrum in employment. The game includes tasks where players must work within a difficult group dynamic with colleagues or take a job interview.

“Identifying emotions is so important when interacting with others in our daily lives. We hope that the game will provide a safe space to enhance the ability of individuals on the spectrum to identify emotions in a fun and engaging way,” said Melissa.

Supporting Early Literacy Skills

Autism CRC researchers from Griffith University in partnership with the AEIOU Foundation have developed an individualised, autism-specific shared book reading intervention for parents and their young children on the autism spectrum.



The intervention aims to change the way parents share books with their children to improve the early literacy-related skills of this group of preschoolers.

A study commissioned by Autism CRC in 2015, demonstrated that preschoolers on the autism spectrum often have relatively strong letter name and sound knowledge, skills that are needed for future word recognition skills. However, their results also revealed significant difficulties comprehending stories, an important skill for future reading comprehension.*

Based on the findings from this study, The project team from Griffith University (Dr Marleen Westerveld, Dr Jessica Paynter, and Dr David Trembath) has developed and trialled a strengths-based shared book reading intervention to foster emergent literacy skills in a context that is part of the daily routine in most homes.

"Shared book reading plays a vital role in children's emergent literacy development," said Project Leader Dr Marleen Westerveld.

"It can also facilitate children's social interaction and fosters spoken language, all of which are essential for successful participation at school, both socially and academically."

"The intervention teaches parents fun and engaging strategies that can be used to target meaning-related emergent literacy skills during shared book reading time to improve children's vocabulary and story comprehension. The strategies focus on words, story content, and having fun."

A total of 17 families participated in the study, ten of whom received the intervention first. Parents receiving the eight-week intervention worked with a speech pathologist without the child present and reviewed videos of their shared book reading time, using a total of eight specially chosen story books.

Analysis of the videos of the parents during shared book reading time showed improvements for the group receiving the intervention both in the time spent and the child utterances. Parents and children spent more time sharing the books, used more book-related language, and focused more on the overall

structure of the story. In turn, the children became more talkative, and used a wider variety of words.

"This type of intervention has not been evaluated before with children on the autism spectrum, and while it was a small sample group, the results are extremely promising showing a significant impact on both the parents and the children's behaviour."

"The trial has demonstrated that changing parent behaviour has a positive impact on the child who was not directly involved in the intervention."

The project team will now work closely with early childhood allied health professionals to upskill them in helping parents to facilitate important emergent literacy skills of their children while engaging in shared book reading in a fun and relaxed way.

"We firmly believe that the 'coaching' sessions and additional support given to the parents has been the critical factor to gaining such significant results in this study. We are extremely excited to begin sharing this intervention with professionals working with children on the spectrum. We also hope to see the intervention delivered in library workshops for parents."

The full report from this study will be available on the Autism CRC website soon autismcrc.com.au/reports.

*Westerveld, M. F., Paynter, J., Trembath, D., Webster, A. A., Hodge, A. M., & Roberts, J. (2017). The emergent literacy skills of preschool children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 47(2), 424-438. doi:10.1007/s10803-016-2964-5

Early Years Behaviour Support Program – A tele-consultancy approach

Researchers at The Queensland University of Technology are leading a project aiming to develop guidelines to apply tele-health delivery to education settings. This is one of five projects to have extended reach under the Autism CRC collaboration with Positive Partnerships.

The Early Years Behaviour Support Program was developed to provide individualised and contextualised support to children on the autism spectrum and staff who work with them in rural and remote regions.

Project Leader, Dr Beth Saggars from the Queensland University of Technology, said the project will determine whether remote, tele-consultancy is effective in supporting staff in rural and remote regions who are working with students with diverse educational needs.

The project team has just completed the first year of the project, working with teachers, other educational staff and families in three schools in rural and regional New South Wales and Queensland. Early results have been very positive and have shown that the school, the parents and the child benefit from the tele-consultancy approach.

“The program provides parents and teachers with ongoing individualised support with specialist staff through a combination of face to face visits, remote conferencing, email and phone calls,” said Dr Saggars.

“Consultants provided a range of practical advice including classroom set up and strategies for teachers to plan for and respond to incidences. In our trial, we found the consultant was also instrumental in building a positive relationship between the school and the parents.”

A significant benefit of the program is providing more support to young teachers in rural and remote regions

who can feel isolated without the knowledge and resources needed to effectively support children on the spectrum.

“Providing tools and strategies to support a child on the spectrum, along with building a positive relationship between the school and the family, has been shown to reduce behavioural incidences, such as meltdowns. For one child in our trial, behavioural incidences reduced from 12 in one term to zero in term four.”

“Teachers also reported that they were able to translate the new skills they had learned to support other children in the class and also provide a positive transition into the new school year with a new teacher.”

The collaboration with Positive Partnerships allows Autism CRC to extend the project to a further two remote schools in the 2017 trial.

Positive Partnerships National Director, Jacqui Borland said the team is looking forward to working with Autism CRC on the project.

“Drawing on the emerging findings from this project, and the other projects as part of our collaboration with Autism CRC, will ensure that resources for school staff and parents and carers continue to reflect best practice approaches to supporting children on the autism spectrum across Australia,” said Jacqui.

Following the three-year trial, the project team will define an evidence-based tele-consultancy model for educational settings and establish good practice guidelines for use in delivering support to children in regional and remote areas. The team will also assess the program’s applicability to other geographical locations such as metropolitan areas.



New employees for Sunpork Farms

Recruitment for the Autism and Agriculture project is almost complete. An initiative of SunPork Farms and Autism CRC, seven autistic adults have been employed in Queensland and training is underway in a South Australian piggery for the second group of candidates. Autism and Agriculture Project Leader, Dr Kirsty Richards said the transformation of the candidates throughout the process has been remarkable.



"Autism and Agriculture has shifted the paradigm for employee recruitment and selection. We're providing people with opportunities to show us, rather than tell us, their abilities to care for our livestock, develop new skills and work safely," said Dr Richards.

"To see our new employees gain confidence and earn satisfaction from their work is extremely rewarding for the entire SunPork Farms team. Watching them transform as individuals, form often their first friendships and become part of our team has been life-changing. The success of this program challenges business more widely to relook at traditional recruitment, training and support frameworks to better accommodate a diverse workforce."



SPOTLIGHT ON

Autism
Research



Autism Month, 2017

celebrate diversity | promote acceptance





During Autism Month in April, Autism CRC will be holding a series of webinars to provide up-to-date information on autism research across our three research programs. Two additional webinars will highlight the strengths of autism with a panel discussion by a group of autistic adults and a presentation on neurodiversity. Stay tuned for more information.

Find out more

There are many ways for you to get involved with Autism CRC.

Visit the website for news, research outcomes and ways to get involved with Autism CRC.

autismcrc.com.au

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The Cooperative Research Centre for Living with Autism (Autism CRC) is the world's first national, cooperative research effort focused on autism across the lifespan.



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